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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/904,175	07/11/2001	Hau H. Doung	A-68718-3/RFT/RMS/RMK	1169

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EXAMINER	
FORMAN, BETTY J	
ART UNIT	PAPER NUMBER
1634	

DATE MAILED: 03/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/904,175	DOUNG ET AL.	
	Examiner	Art Unit	
	BJ Forman	1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 January 2006*.

2a)☐ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *42-52 and 54-66* is/are pending in the application.

4a) Of the above claim(s) *65* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *42-52,54-64 and 66* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 17 January 2006 has been entered.

Status of the Claims

2. This action is in response to papers filed 17 January 2006 which claims 42, 45, 49 and 65 were amended and claim 66 was added. All of the amendments have been thoroughly reviewed and entered.

The previous rejections in the Office Action dated 17 October 2005, not reiterated below, are withdrawn in view of the amendments. Applicant's arguments have been thoroughly reviewed but are deemed moot in view of the amendments, withdrawn rejections and new grounds for rejection. New grounds for rejection are discussed.

Claim 65 is withdrawn from consideration.

Claims 42-52, 54-64 and 66 are under prosecution.

Claim Objections

3. Claims 55 and 60 are objected to because of the following informalities:

Claim 55 is objected to because it does not further limit Claim 42.

Claim 60 is objected to because it contradicts the nucleic acid binding ligands of Claims 42, 45 and 49.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 42-52, 54-64 and 66 are rejected under 35 U.S.C. 102(e) as being anticipated by Blackburn et al (U.S. Patent No. 6,761,816, filed 14 August 1998).

The applied reference has a common inventor and assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Claims 42-52, 54-64 and 66 are disclosed and claimed by Blackburn et al (Claims 1-16) and further defined in the specification has having a port i.e. hybridization is injected into the cartridge (Column 93, lines 22-26). The site of injection is encompassed by the broadly claimed inlet port.

6. Claims 42-47, 52, 54, 63 and 66 are rejected under 35 U.S.C. 102(e) as being anticipated by Wohlstadter et al (U.S. Patent No. 6,207,369, filed 17 September 1996).

Regarding Claim 42, Wohlstadter et al disclose a cartridge comprising a reaction chamber having an array of electrodes on a substrate (Column 8, lines 38-44), the substrate having a SAM layer (Column 22, lines 34-44) and nucleic acid probe covalently attached (Column 39, lines 20-28), the cartridge further comprising an inlet and outlet port (Column 43, lines 46-55) and electrical connections for the electrodes (Column 85, lines 1-12). Wohlstadter et al teach the cartridge having inlet and outlet ports. Wohlstadter further teach the cartridge is portable (Column 7, lines 46-54). Because the cartridge is portable the either port would be in the top or bottom at any given time based on the orientation of the cartridge at that time.

Regarding Claim 43, Wohlstadter et al disclose the cartridge wherein the ports are separated (Column 43, lines 44-67 and Fig. 69).

Regarding Claim 44, Wohlstadter et al disclose the cartridge wherein the ports are connected via the cartridge (Column 43, lines 44-67).

Regarding Claim 45, Wohlstadter et al disclose a cartridge comprising a reaction chamber having an array of electrodes (Column 8, lines 38-44) wherein the electrodes are a printed circuit on the substrate (Column 85, lines 7-12), the substrate having a SAM layer (Column 22, lines 34-44) and nucleic acid probe covalently attached (Column 39, lines 20-28), the cartridge further comprising an inlet and outlet port (Column 43, lines 46-55) and electrical connections for the electrodes (Column 85, lines 1-12).

Regarding Claim 46, Wohlstadter et al disclose a cartridge wherein the electrodes are a printed circuit on the surface of the substrate (Column 85, lines 7-12).

Regarding Claim 47, Wohlstadter et al disclose a cartridge wherein the electrodes are a fabricated (i.e. screen printed) on the surface of the substrate (Column 85, lines 7-12).

Regarding Claim 52, Wohlstadter et al disclose the cartridge of Claim 42 wherein the electrodes are a printed circuit on the substrate (Column 85, lines 7-12).

Regarding Claim 54, Wohlstadter et al disclose the cartridge having a gasket (Column 103, lines 41-46).

Regarding Claim 63, Wohlstadter et al disclose the cartridge wherein the electrodes are gold (Column 85, lines 7-12).

Regarding Claim 66, Wohlstadter et al disclose the cartridge wherein the nucleic acid is linked via a conductive oligomer i.e. linking chain to efficiently transport electrons (Column 39, lines 60-62).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 45-47, 55-57, 60-64 and 66 are rejected under 35 U.S.C. 102(e) as being anticipated by Lennox et al (U.S. Patent No. 6,461,490, filed 24 April 1997) as defined by Morris, C. ed (Academy Press Dictionary of Science and Technology, Academic Press, San Diego, 1992, page 1726) in view of Wohlstadter et al (U.S. Patent No. 6,207,369, filed 17 September 1996).

Regarding Claim 45, Lennox et al disclose a biochip cartridge comprising a reaction chamber comprising a substrate comprising a printed circuit board comprising an array of electrodes a self assembled monolayer and a capture binding ligand (Column 14, lines 33-42) wherein the ligand is covalently attached to the electrode film #50 (Column 8, lines 21-25; Column 10, lines 1-8; and Fig. 4-5) and a inlet port for reagent introduction and interconnects for electrical connections (Column 5, lines 12-60; Column 15, lines 12-30; and Fig. 1 and 13-14) wherein the binding ligands comprising nucleic acids (Column 8, lines 59-63).

It is noted that the specification defines the claimed circuit board as comprising a substrate coated with a conducting layer and process using photolithography (page 17, lines 27-30). Furthermore, the Academy Press Dictionary defines printed circuit board as "rectangular device onto which various chemical elements and substrates are laid down so that wiring can be applied". Lennox et al disclose the array of electrodes produced via photolithography (Column 14, lines 35-40). Hence, Lennox, disclose the printed circuit board as claimed.

Lennox does not teach covalently attached nucleic acids. However, Wohlstadter et al teach a similar device wherein the nucleic acids are covalently attached whereby electron transfer is increased (Column 39, lines 20-28). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to covalently attach the nucleic acid to the electrodes of Lennox. One of ordinary skill in the art would have been motivated to do so for the expected benefit of increasing electron transfer as preferred in the art (Wohlstadter et al, Column 39, lines 20-28).

Regarding Claim 46, Lennox et al disclose the biochip wherein the electrode is on a surface of the printed circuit board (Column 14, lines 35-40 and Fig. 14).

Regarding Claim 47, Lennox et al disclose the biochip wherein the electrode is fabricated on the surface via photolithography (14, lines 35-40 and Fig. 14).

Regarding Claim 55, Lennox et al disclose the biochip wherein the reaction chamber further comprises an outlet port (Column 5, lines 38-41).

Regarding Claim 56, Lennox et al disclose the biochip wherein the array is on one surface of the substrate (Column 14, lines 11-14).

Regarding Claim 57, Lennox et al disclose the biochip wherein two surfaces of the substrate comprise an array (Column 14, lines 11-14).

Regarding Claim 60, Lennox et al disclose the biochip wherein the binding ligands comprising proteins (Column 8, lines 59-63).

Regarding Claim 61, Lennox et al disclose the biochip comprising an assay complex comprising a binding ligand, target and electron transfer moiety i.e. ionic species (Column 11, lines 55-Column 12, line 35).

Regarding Claim 62, Lennox et al disclose the biochip wherein the monolayer comprises a conductive oligomer (Column 12, lines 13-16).

Regarding Claim 63, Lennox et al disclose the biochip wherein at least one electrode is gold (Column 14, lines 38-39).

Regarding Claim 64, Lennox et al disclose the biochip wherein the monolayer comprise a thiol forming species (Column 2, lines 48-51).

Regarding Claim 66, Wohlstadter et al disclose the cartridge wherein the nucleic acid is linked via a conductive oligomer i.e. linking chain to efficiently transport electrons (Column 39, lines 60-62). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to attach the nucleic acid via a conductive oligomer for the expected benefit of efficiently transporting electrons as desired in the art (Wohlstadter et al, Column 39, lines 60-62).

9. Claims 42-44, 46-52, 54-58, 60-64 and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lennox et al (U.S. Patent No. 6,461,490, filed 24 April 1997) as defined by Morris, C. ed (Academy Press Dictionary of Science and Technology, Academic Press, San Diego, 1992, page 1726) in view of Anderson et al (U.S. Patent No. 6,326,211, filed 19 April 1999) and Wohlstadter et al (U.S. Patent No. 6,207,369, filed 17 September 1996).

Regarding Claims 42 and 49, Lennox et al disclose a biochip cartridge comprising a reaction chamber comprising a substrate comprising an array of electrodes a self assembled monolayer and a capture binding ligand (Column 14, lines 33-42) wherein the ligand is covalently attached to the electrode film #50 (Column 8, lines 21-25; Column 10, lines 1-8; and

Fig. 4-5) and a inlet port and an outlet port (Column 5, lines 37-41) and interconnects for electrical connections (Column 5, lines 12-60; Column 15, lines 12-30; and Fig. 1 and 13-14) and wherein the binding ligands comprising nucleic acids (Column 8, lines 59-63).

Lennox et al further teach the cartridge comprises inlet port and outlet port i.e. vent are provided to facilitate fluid flow through the chamber (Column 5, lines 38-41 and Column 11, lines 31-34) but they are silent regarding a semi-permeable membrane for the vent and positioning of the inlet port and vent.

However, Anderson teaches a similar cartridge comprising a biochip array, the cartridge comprising an inlet port (#110) and vent comprising a membrane filter (#118) (Column 20, lines 56-62 and Column 22, lines 6-28) wherein the inlet is positioned at the bottom of the chamber and the vent is positioned at the top of the chamber. Anderson et al further teach the arrangement of the outlet and vent facilitates selective movement of reagents within the chamber, permits gas within the chamber to be expelled upon regent introduction (Column 30, lines 30-67) and allows reagent mixing by letting bubbles within the chamber to exit upon reagent introduction (Column 3, lines 50-56).

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the inlet and vent in the reaction chambers of Lennox et al by positioning the inlet at the bottom of the chamber and the vent at the top of the chamber as taught by Anderson et al. One of ordinary skill in the art would have been motivated to do so by the teaching of Anderson et al wherein they teach the arrangement facilitates selective movement of reagents within the chamber, permits gas within the chamber to be expelled upon regent introduction (Column 30, lines 30-67) and allows reagent mixing by letting bubbles within the chamber to exit upon reagent introduction (Column 3, lines 50-56).

Lennox does not teach covalently attached nucleic acids. However, Wohlstadter et al teach a similar device wherein the nucleic acids are covalently attached whereby electron transfer is increased (Column 39, lines 20-28). It would have been obvious to one of ordinary

skill in the art at the time the claimed invention was made to covalently attach the nucleic acid to the electrodes of Lennox. One of ordinary skill in the art would have been motivated to do so for the expected benefit of increasing electron transfer as preferred in the art (Wohlstadter et al, Column 39, lines 20-28).

Regarding Claims 43 and 44, Lennox et al disclose the chamber comprises an inlet port and vent (Column 11, lines 31-34) but are silent regarding the physical relationship of the port and vent.

Anderson teaches a similar cartridge comprising an inlet port (#110) and vent (#118) (Column 20, lines 56-62 and Column 22, lines 6-28) wherein the inlet and vent are separated by fluidically connected. Anderson et al further teach the arrangement of the outlet and vent facilitates selective movement of reagents within the chamber, permits gas within the chamber to be expelled upon regent introduction (Column 30, lines 30-67) and allows reagent mixing by letting bubbles within the chamber to exit upon reagent introduction (Column 3, lines 50-56).

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the inlet and vent in the reaction chambers of Lennox et al by positioning the inlet at the bottom of the chamber and the vent at the top of the chamber as taught by Anderson et al. One of ordinary skill in the art would have been motivated to do so by the teaching of Anderson et al wherein they teach the arrangement facilitates selective movement of reagents within the chamber, permits gas within the chamber to be expelled upon regent introduction (Column 30, lines 30-67) and allows reagent mixing by letting bubbles within the chamber to exit upon reagent introduction (Column 3, lines 50-56).

Regarding Claim 46, Lennox et al disclose the biochip wherein the electrode is on a surface of the printed circuit board (Column 14, lines 35-40 and Fig. 14).

Regarding Claim 47, Lennox et al disclose the biochip wherein the electrode is fabricated on the surface via photolithography (14, lines 35-40 and Fig. 14).

Regarding Claim 48, Lennox et al disclose the biochip of Claim 24 comprising an outlet port (Column 11, lines 31-34) but are silent regarding a membrane filter. However, Anderson et al teach the similar chamber wherein the outlet port comprises a semi permeable membrane whereby gas is permitted to escape while maintaining fluid within the chamber (Column 22, lines 6-28). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the outlet vent of Lennox et al by addition of a semi permeable membrane as taught by Anderson et al for the expected benefit of allowing gas escape while maintaining the fluid (Column 22, lines 6-28).

Regarding Claim 50, Anderson et al teach the preferred semi permeable membrane comprises polytetrafluorethylene i.e. TEFLON (Column 22, lines14).

Regarding Claim 51, Anderson et al further teach the membrane allows escape of gas while retaining the sample fluid e.g. Teflon (Column 22, lines 6-17 and Fig. 2B) but they do not teach the permeable membrane is Gortex™. However, the specification teaches that Teflon and Gortex™ are functional equivalents (page 13, second paragraph).

> For example, a semi-permeable membrane or filter may be used, that preferentially allows the escape of gas but retains the sample fluid in the chamber. For example, porous teflons such as Gortex™ allow air but not fluids to penetrate.

The courts have stated with regard to homologs that the greater the physical and chemical similarities between the claimed species and any species disclosed in the prior art, the greater the expectation that the claimed subject matter will function in an equivalent manner (see *Dillon*, 99 F.2d at 696, 16 USPQ2d at 1904). Therefore, based on the functional equivalency of Teflon and Gortex™ one of ordinary skill in the art would have been motivated to substitute Gortex™ for the Teflon of Anderson et al because one of ordinary skill would have expected the two membranes to function in an equivalent manner.

Regarding Claim 52, Lennox et al teach a printed circuit board. It is noted that the specification defines the claimed circuit board as comprising a substrate coated with a conducting layer and process using photolithography (page 17, lines 27-30). Furthermore,

the Academy Press Dictionary defines printed circuit board as "rectangular device onto which various chemical elements and substrates are laid down so that wiring can be applied". Lennox et al disclose the array of electrodes produced via photolithography (Column 14, lines 35-40). Hence, Lennox, disclose the printed circuit board as claimed.

Regarding Claim 54, Lennox et al teach the chamber is designed to hold a solution (Column 1, lines 29-30) but they are silent regarding the presence of a gasket. However, Anderson et al teach the similar chamber for holding a solution wherein the chamber comprises a gasket (i.e. diaphragm) that retains fluid in contact with the array (Column 21, lines 35-60). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the diaphragm of Anderson et al to the chamber of Lennox et al for the expected benefit of sealing the reaction chamber as preferred by Anderson (Column 4, line 16-20 and Column 36, lines 53-55).

Regarding Claim 55, Lennox et al disclose the biochip wherein the reaction chamber further comprises an outlet port (Column 5, lines 38-41).

Regarding Claim 56, Lennox et al disclose the biochip wherein the array is on one surface of the substrate (Column 14, lines 11-14).

Regarding Claim 57, Lennox et al disclose the biochip wherein two surfaces of the substrate comprises an array (Column 14, lines 11-14).

Regarding Claim 58, Anderson et al teach the similar cartridge further comprising means a top (Column 16, lines 2-11) and at least one storage well comprising assay reagents (Column 24, lines 44-65 and Fig. 5 A & B) wherein the arrangement of storage wells adjacent to the substrate provides easy access to reagents and convenient storage reagents (Column 25, lines 42-52). While they do not specifically teach the cap comprises the storage well, they clearly suggest such a configuration when they teach adjacent to and easy access. Furthermore, the courts have stated that a rearrangement of parts known in the art is a mere design choice and not patentable over the prior art parts. Therefore, It would have been

obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the arrangement of cap and storage well to incorporate the storage well in the cap based on the desired adjacent arrangement providing convenient storage taught by Anderson et al (Column 25, lines 42-52).

> In re Japikse, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950) (Claims to a hydraulic power press which read on the prior art except with regard to the position of the starting switch were held unpatentable because shifting the position of the starting switch would not have modified the operation of the device.); In re Kuhle, 526 F.2d 553, 188 USPQ 7 (CCPA 1975) (the particular placement of a contact in a conductivity measuring device was held to be an obvious matter of design choice) (MPEP 2144.04).

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the cap comprising a storage well as taught by Anderson et al to the cartridge of Lennox et al for the expected benefits of easy access to reagents and convenient storage reagents as taught by Anderson et al (Column 25, lines 42-52).

Regarding Claim 60, Lennox et al disclose the biochip wherein the binding ligands comprising proteins (Column 8, lines 59-63).

Regarding Claim 61, Lennox et al disclose the biochip comprising an assay complex comprising a binding ligand, target and electron transfer moiety i.e. ionic species (Column 11, lines 55-Column 12, line 35).

Regarding Claim 62, Lennox et al disclose the biochip wherein the monolayer comprises a conductive oligomer (Column 12, lines 13-16).

Regarding Claim 63, Lennox et al disclose the biochip wherein at least one electrode is gold (Column 14, lines 38-39).

Regarding Claim 64, Lennox et al disclose the biochip wherein the monolayer comprise a thiol forming species (Column 2, lines 48-51).

Regarding Claim 66, Wohlstadter et al disclose the cartridge wherein the nucleic acid is linked via a conductive oligomer i.e. linking chain to efficiently transport electrons (Column 39,

lines 60-62). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to attach the nucleic acid via a conductive oligomer for the expected benefit of efficiently transporting electrons as desired in the art (Wohlstadter et al, Column 39, lines 60-62).

10. Claim 59 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lennox et al (U.S. Patent No. 6,461,490, filed 24 April 1997) as defined by Morris, C. ed (Academy Press Dictionary of Science and Technology, Academic Press, San Diego, 1992, page 1726) and Anderson et al (U.S. Patent No. 6,326,211, filed 19 April 1999) and Wohlstadter et al (U.S. Patent No. 6,207,369, filed 17 September 1996) as applied to Claim 9 above and further in view of Hayes et al (U.S. Patent No. 6,334,980, filed 25 September 1998).

Regarding Claim 59, Lennox et al describe the components of the cartridge (Column 1, lines 12-63 and Column 14, line 28-Column 15, line 31) but do not specifically teach the top is removable.

However, reaction chambers having removable covers were well known in the art at the time the claimed invention was made as taught by Hayes et al who specifically teach the removable cover permits addition of reagents to the chamber at desired times e.g. later (Column 12, lines 44-49). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the reaction chamber of Lennox et al by providing a removable cover as taught by Hayes et al for the expected benefit of permitting reagent addition as desired (Column 12, lines 44-49).

Double Patenting

11. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

12. Claims 42-52, 54-64 and 66 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-16 of U.S. Patent No. 6,761,816 in view of Lennox et al (U.S. Patent No. 6,461,490). Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims are drawn to very similar cartridges comprising a substrate with an electrode array, SAM and covalently attached nucleic acids and electrical connections. The claims sets merely differ in the arrangement of limitations within the claim set e.g. independent claims of the instant claim set define the capture ligand as a nucleic acid while dependent claim 13 so defines the ligand. The claim sets further differ in that the instant claims define the cartridge has having inlet and/or outlet ports. However, cartridges having ports were well known and routinely practiced in the art at the time the claimed invention was made as taught by Lennox et al who teach that ports permit introduction of sample into the closed chamber (Column 5, lines 37-41). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the patent cartridge with the ports of Lennox et al to arrive that

instantly claimed invention. One of ordinary skill in the art would have been motivated to do so for the expected benefit of introducing a sample into the closed chamber as desired in the art (Lennox et al, Column 5, lines 37-41).

13. Claims 42-52, 54-64 and 66 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-7, 10-12, 14-16, 32-34 of allowed Application No. 09/712,792. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims are drawn to very similar cartridges comprising a substrate with an electrode array, SAM and covalently attached nucleic acids and electrical connections. The claims sets merely differ in the arrangement of limitations within the claim sets and terminology used to describe elements of the cartridge. For example, independent claims of the instant claim set define the capture ligand as a nucleic acid while dependent claim 12 so defines the ligand. Further, instant claims define the chamber as having a port while the '792 claim sets define a channel, both the channel and port are defined by a filter membrane. Therefore, the claims sets are drawn to cartridges that are not patentably distinct.

14. Claims 42-52, 54-64 and 66 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 15-24 of copending Application No. 10/412,660. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims are drawn to very similar cartridges comprising a substrate with an electrode array, SAM and covalently attached nucleic acids and electrical connections. The claims sets merely differ in the arrangement of

limitations within the claim sets e.g. independent claims of the instant claim set define the capture ligand as a nucleic acid and the substrate as having an array of electrodes while dependent claims 21 & 23 of the '660 application so define the invention.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

15. No claim is allowed.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BJ Forman whose telephone number is (571) 272-0741. The examiner can normally be reached on 6:00 TO 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Jones can be reached on (571) 272-0745. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

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